Patent Claims

1. Aqueous radiation curable binders comprising non-ionically stabilised epoxy resins **ABC**, characterised in that they comprise building blocks of epoxy resins **A** modified with polyethylene glycol, of epoxy resins **B** that are free from polyethylene glycol groups, and of olefinically unsaturated acids **C**, and that at least 50 % of all reaction products derived from the epoxy resins **A** and **B** comprise at least one ester group formed by reaction of a terminal epoxy group with an olefinically unsaturated acid **C**.

2. Aqueous radiation curable binders according to claim 1, characterised in that they contain unsaturated urethanes **DEF** which are derived from polyfunctional isocyanates **D**, of polyfunctional aliphatic alcohols **E**, and of hydroxyl group-containing olefinically unsaturated compounds **F**.

3. Aqueous radiation curable binders according to claim 2, characterised in that the ratio of the mass of the epoxy resins **ABC** to the mass of the urethanes **DEF** is (90 to 30) : (10 to 70).

4. Aqueous radiation curable binders according to claim 1, characterised in that they additionally comprise reaction products **G'GHI** of epoxy resins **G'** with at least two epoxide groups per molecule, and reaction products **GHI** of epoxy resins **G**, fatty acids **H** and amines **I**.

5. Aqueous radiation curable binders according to claim 4, characterised in that the ratio of the mass of the epoxy resins **ABC** to the mass of reaction products **G'GHI** is (90 to 30) : (10 to 70).

6. Aqueous radiation curable binders according to claim 2, characterised in that they additionally comprise reaction products **G'GHI** of epoxy resins **G'** with at least two epoxide groups per molecule, and reaction products **GHI** of epoxy resins **G**, fatty acids **H** and amines **I**.

7. Aqueous radiation curable binders according to claim 6, characterised in that the ratio of the mass of the epoxy resins **ABC** to the mass of the urethanes **DEF** is (90 to 30) : (10 to 70).

8. A process for the preparation of the aqueous radiation curable binders of claim 1, characterised in that in the first step, an epoxy resin **A** modified by polyethylene glycol is prepared

by reacting the hydroxy compound on which the epoxy resin is based with the diepoxide on which the epoxy resin is based in the way of an advancement reaction, this epoxy resin is then mixed with an epoxy resin **B** which is not modified with polyethylene glycol, and in the second step this mixture is reacted with an olefinically unsaturated acid **C**, wherein in this step, a mixture of adducts **ABC** is formed by ring opening of the epoxide rings.

9. A process for the preparation of the aqueous radiation curable binders of claim 2, characterised in that a urethane acrylate **DEF** is synthesised from a polyfunctional isocyanate **D**, optionally a saturated aliphatic polyhydric hydroxy compound **E**, and an olefinically unsaturated aliphatic compound **F** with a hydroxyl group and at least one olefinic double bond, which urethane acrylate **DEF** is then mixed with the adduct **ABC** of claim 8.

10. A process for the preparation of the aqueous radiation curable binders of claim 4, characterised in that by reaction of epoxide compounds **G** with amines **I** and fatty acids **H** an intermediate product is made which is then reacted with an epoxy resin **G'** with at least two epoxy groups per molecule to from an adduct **G'GHI** which is then mixed to the adduct **ABC** of claim 8.

11. A process for the preparation of aqueous radiation curable binders of claim 6, characterised in that by reaction of epoxide compounds **G** with amines **I** and fatty acids **H** an intermediate product is made which is then reacted with an epoxy resin **G'** with at least two epoxy groups per molecule to from an adduct **G'GHI** which is then mixed to the adduct **ABC** of claim 9.

12. A method of use of aqueous radiation curable binders according to one of claims 1, 2, 4, or 6 in the production of corrosion protection coatings, comprising the steps of mixing of the binders with a photoinitiator, and optionally further additives, coating of the substrate with the paint by rolling, dipping, spraying, brushing, or application with a doctor blade, drying of the coating at a temperature of from 20 °C to 90 °C, and curing by irradiation with high energy radiation.

13. The method of claim 12 for the production of corrosion protection coatings on metals.

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